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General Articles

THE VETERINARY SITUATION IN NORTHERN IRELAND

[CONTRIBUTED]

Government Veterinary Services in Northern Ireland have recently expanded to a great extent with resulting increases of staff. A short description of the schemes which have led to expansion and how the recent, biggest recruitment to the Service has been met, may be of interest to the profession.

Originally the Ministry of Agriculture Veterinary Staff was employed almost exclusively on Portal Inspection duties at Belfast, Londonderry, Larne and Newry in connection with the export and import of stock and in work under the Diseases of Animals Acts.

The Agricultural Produce (Meat Regulations) Act (Northern Ireland) of 1930 necessitated a big addition to the staff, since that Act provides, *inter alia,* for the inspection and certification of all meat and meat products before export from Northern Ireland, and the inspection of all pigs in bacon curing factories. All that inspection and certification has to be carried out by veterinary surgeons, whilst all exporters of fresh meat and all bacon curers must hold a licence from the Ministry.

With the regulation and control of the importation of cattle from the Irish Free State, arrangements for the visiting of Customs posts on the Border by veterinary officers who became "authorised officers" under the Regulations had to be quickly made and staff had to be hurriedly recruited for the work. The introduction later of the Cattle Industry (Emergency Provisions) Act of 1934 increased their duties, since it entailed the supervision of the marking of all imported cattle at the various Customs posts.

The working of the Cattle Industry (Emergency Provisions) Act of 1934, in Northern Ireland, as far as the certification of cattle is concerned, on the same lines as pertain in Great Britain would have presented peculiar difficulties since, apart from Belfast and Londonderry, most of the cattle are sold in local Fairs and the setting up of panels similar to those in Great Britain to do the work of certification would have been well-nigh impossible. It was accordingly decided that the Veterinary Staff of the Ministry would take on the work of certification of cattle and to this the Cattle Committee agreed. It can truthfully be said that in a short time the work was done, and is now being done, in a manner highly satisfactory to all concerned. The adaptability of the veterinary profession has, in this work, been clearly demonstrated!

With the institution of the Pig Marketing Schemes in Northern Ireland the grading of pig carcases as a statutory requirement followed and quite reasonably it was decided that veterinary officers should do that work, since grading is carried out in the curers' premises in which veterinary officers are already in attendance on meat inspection duties. Additional men were obtained for these duties and after some reorganisation the work has gone on very smoothly. Producers and curers alike were of opinion that veterinary officers would be absolutely impartial in grading and there was never any serious suggestion made that any but veterinary officers should do the work.

Recently, 20 additional whole-time veterinary officers have been taken on by the Ministry to carry on the various duties under the milk scheme. Briefly, the scheme, from a veterinary aspect, entails the examination and inspection of all milch cows in Northern Ireland and of all premises on which milk is produced. Generally these duties have to be performed by whole-time officers of the Ministry. In addition, the testing of all the Grade A (T.T.) herds, to the number of 60 at present, has to be done by the whole-time officers of the Ministry. Prior to the introduction of the recent Milk Act the functions of the Dairies and Cowsheds Order were carried out by part-time veterinary officers who got salaries of "varying munificence" from their local authorities. The question of the part-time officer deprived of his Local Authority work under the Dairy and Cowsheds Order and of his work under the Tuberculosis Order (which has also now been taken over by the Ministry) would have become acute, but this difficulty was got over by making the new appointments for that work open to—firstly, veterinary surgeons holding Local Authority appointments and secondly, veterinary surgeons in practice in Northern Ireland. Moreover, it was decided that in making these appointments no age limit would be stipulated. Fifteen of the 20 posts were filled by Local Authority officers or practising veterinary surgeons in

Northern Ireland who now become whole-time officers of the Ministry. Each veterinary officer has his own area and is responsible for that area. The milk scheme is newly started and the officers appointed are just settling down to their duties. There is every reason to believe that good results will accrue from this whole-time service. Altogether, there is now a staff of over 60 whole-time veterinary officers in the Ministry of Agriculture, Northern Ireland, and that staff will deal with practically the whole of the contagious diseases, milk and dairy inspection, inspection of meat for export and the other duties enumerated.

SPINAL (EPIDURAL) ANÆSTHESIA IN THE DOMESTIC ANIMALS

A Review of Our Knowledge at the Present Time

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(*Continued from page* 553.)

SOLUTIONS FOR USE IN EPIDURAL ANÆSTHESIA

A solution for use in epidural anæsthesia should (*a*) be of low toxicity, (*b*) possess a high degree of anæsthetising efficiency, (*c*) act upon the nerve roots for a long period, (*d*) withstand boiling and (*e*) not readily undergo deterioration. The Therapeutic Committee of the British Medical Association investigating the properties of the various analgesic agents showed that novocaine was the best local anæsthetic, being only one-seventh as toxic as, and possessing an anæsthetising power equal to, cocaine. It can be heated to 120° C. without decomposition. Forque and Basset[23] and Barker have shown that novocaine in solution gradually loses its potency and hence should not be kept long. In addition, Cuillé and Chelle[60] have studied the question of duration of action of novocaine solutions in veterinary work. Duration may be controlled by governing the rate of elimination which occurs chiefly through resorption into the veins. This may be retarded by the addition of a vaso-constrictor substance such as adrenalin.

Novocaine hydrochloride is a German product and forms the basis of most local and regional anæsthetics. Messrs. Parke Davis kindly furnished the writer with a quotation from Martindale's Extra Pharmacopœia, 20th edition, vol. 1, pp. 331-334, which sets out the names under which novocaine is referred to in different countries, *viz*:—

"Novocaine, kerocain, planocaine and æthocaine are all trade mark names for one and the same substance, *i.e.*, para-amino-benzoyldiethyl-amino ethanol hydrochloride, $C_6H_4(NH_2)COO\ C_2H_4N\ (C_2H_5)_2\ HCl$.

This is the same substance as that which is described in various pharmacopœias by the following different titles:—

French Codex Supplement		1920	Para-amino-benzoyldiethyl amino ethanol hydrochloride
Italian Pharmacopœia	V	1929	
Japanese Pharmacopœia	IV	1921	
Argentine Pharmacopœia	II	1919	
German Pharmacopœia	VI	1926	
Nederlands Pharmacopœia	V	1926	
Swedish Pharmacopœia	X	1925	
British Pharmaceutical Codex		1923	Ethocaine hydrochloride
Spanish Pharmacopœia	VIII	1930	
Belgian Pharmacopœia			Allocain Syncaine Procaine
United States Pharmacopœia	X	1926	Procaine hydrochloride
British Pharmacopœia		1932	

The writer has chiefly used a solution termed "Parcaine," now known as "Parsetic," manufactured by Parke Davis, London, and described by them as a 2½ per cent. ethocaine-adrenalin solution. It is marketed as a sterile solution in rubber-capped bottles of convenient size and has given uniformly good results in large and small animals. The solution occasionally develops a brown tinge (adrenalin-change) and should then be rejected. The author has also used :—

A. Waite's solution (Formula No. 4), an American product which contains procaine and ephredine.* This gave satisfactory results in all animals.

B. Tutocain, largely used in Germany and Scandinavia and sold in sterile ampoules. Results were good, but it was only used in a limited number of cases.

The writer has collected the following details of other solutions in use in this country and abroad:—

Novocaine solution 3 per cent.-6 per cent. used by Pitzch.[10]

Procaine; 2 per cent. solution with or without adrenalin was used by Frank.[48]

A 1 per cent. solution was used by McLeod and Frank[13] and an 0·75 per cent. solution is referred to by Hewit.[49]

Tutocain—a Bayer preparation used extensively in Germany, Scandinavia and Denmark.

Chemocain was used by Ritcher.[16]

Locadyne mentioned by Frank.[48]

Dulcin solution, 1 per cent., is referred to by McLeod and Frank.[13]

Percain or Percain-Ciba, the chloral-hydrate of butoxycinchoninsäuredäthyläthylendiamide, has been used by Srnetz[35] and Hodgkins.[64] This preparation, according to Pardubsky,[36] has a prolonged action.

Finally, it may be mentioned that Cuillé and Chelle recommended the use of a 2 per cent. novocaine adrenalin solution containing sodium bicarbonate. The latter enhances the action of the anæsthetic (Löwen). The author has tried this solution but found no apparent differences between its action and that of other and simpler solutions.

* Ephredine is the alkaloid obtained from *Ephreda vulgaris;* it is similar in structure and action to adrenalin but is said to possess several disadvantages (Evans): acts slowly, counteracts adrenalin and varies in its effects.

There was the added disadvantage that the bicarbonate had to be carried in a separate ampoule and added only immediately before use, novocaine being unstable in an alkaline solution.

As will be seen, the number of substances in use is considerable. This may be taken to indicate that probably they are all equally effective.

Recently, in discussions at Leeds (1933) and Peterborough (1934), several veterinarians asserted that in their experience quite small amounts of a solution called "Chlorocain" (Willows, Francis, Butler and Thompson, London) were as effective as much larger injections of novocaine solution. According to these practitioners, an injection of 2–3 c.c. of chlorocain is as effective as 10–12 c.c. of "Parsetic." The writer has had no opportunity of investigating these claims.*

THE MODE OF ACTION OF ANÆSTHETIC SOLUTIONS ON THE NERVE.

The mode of action of anæsthetic solutions on a nerve has been studied chiefly in the dog and man. It was noticed by the earlier workers, Cathelin, Sicard and Tuffier, that epidural injections of cocaine in solution brought about satisfactory anæsthesia in the dog but not in man. They attributed this to the fact that penetration of the drug took place by way of the intra-spinal plexus of veins and as this was more obvious in the dog (Cathelin[7]) a better anæsthesia resulted. Bernardbeig,[11] according to Cuillé and Chelle,[60] believes that the nerve is invaded by way of the lymph and blood vessels. He injected cyanide of iron in solution into the epidural space of a dog which was destroyed five minutes later. Microscopical examination of an epidurally-situated ganglion showed prussian blue granules situated in the central but not in the peripheral cells or connective tissue, apparently indicating that the dye had passed in by way of the blood and lymph paths. The fact that the addition of adrenalin to the solution delayed the onset of anæsthesia, as noted by the same worker, lent support to this view. On the contrary, Frank,[48] referring to experience in clinical work, says: "the addition of adrenalin chloride to the solution of procain hastens and intensifies the action of the drug and lengthens the duration of anæsthesia." Moreover, Cuillé and Chelle[60] have failed to observe a delay in onset of anæsthesia in animals with the use of adrenalin and support the idea of direct penetration of the nerve by the drug. The precise mode of action appears therefore to be in doubt, at least so far as the lower animals are concerned. The onset of anæsthesia is always more or less delayed. The rapidity of onset in the various animals is, in the writer's experience, as follows:—

Rapid. <——————————> *Less Rapid.*

(1) Sheep. Calf. (2) Ox; Pig. Foal. (3) Dog. Cat. (4) Horse.

Generally speaking, penetration is more rapid in the young animal than in the aged; Cuillé and Chelle remark that the presence of pathological conditions leading to thickening of or increase in peridural tissues may explain the failure of an anæsthetic in certain cases. Pachymeningitis in the dog would presumably affect the onset and extension of anæsthesia.

PHENOMENA ACCOMPANYING SPINAL ANÆSTHESIA

In the majority of instances the phenomena accompanying spinal anæsthesia depend upon the action of the drug on the sympathetic and parasympathetic fibres of the roots of the spinal nerves. In the lower animals, with the possible exception of the dog and cat, our knowledge of the anatomy and physiology of the autonomic system is scanty and incomplete. It is therefore proposed to review this subject as understood in man and then to draw analogies in the lower animals.

Such a comparison is not without support on physiological and other grounds. Anatomical studies, the therapeutic action of many drugs (adrenalin, pilocarpine, cocaine), animal experimentation (section of the spinal cord at different levels, which see below) and clinical observation furnish evidence that the nervous systems of man and the domestic animals are fundamentally similar, particularly in the dog and cat. Upon the latter many experiments have been performed which constitute the foundation of a proper understanding of the physiology of the nervous system in man. Studies of the phenomena induced by spinal anæsthesia, *e.g.*, tonic contraction of the small bowel, have been experimentally investigated in the dog. It must be remembered, however, that observations on one species may prove incorrect when applied to a different species or to animals of the same species under different conditions. The action of adrenalin on the uterus is an example (see later).

Thus the subject matter of this section, with certain exceptions, must be accepted as the result only of comparison and deduction rather than of direct experiment, but justified at least by the help that it may give to the clinician in anticipating and avoiding some of the dangers that can threaten a patient during epidural anæsthesia. The writer has drawn freely from text books on spinal anæsthesia in the human, particularly the monograph by Evans.[46] The observations are those known to occur during subarachnoid anæsthesia, the form of spinal block used in human work. A comparison between the effect of subarachnoid and epidural

* Those who wish to become familiar with the question of relative toxicity of the various local anæsthetics should read the treatise by King;[72] in this monograph are to be found experimental data of great interest to the veterinarian.

injection is, physiologically speaking, a reasonable one to make, because the end results of either of these types of anæsthesia depend on blocking the fibres of the same nerve roots at practically the same distance from their origin.

The phenomena accompanying spinal anæsthesia are discussed as follows :—

1. Action of the drug.
2. Physiology of the fall in blood pressure.
3. Physiology of the slowing of the heart.
4. Physiology of decreased respiration.
5. Physiology of increase in peristalsis.
6. Probable physiology of dilatation of the vagina and uterus.
7. Action on the bladder.

1. *Action of the Drug.*—The drug, when in contact with the nerve roots, does not necessarily affect all fibres ; in man, moreover, it has a selector action, blocking them in the following order : (*a*) fibres conveying sensations of pain from the skin and viscera ; (*b*) fibres responsible for tactile sense ; (*c*) fibres conducting impulses of pressure and movement from muscles and joints ; (*d*) Sympathetic fibres receiving messages from the viscera and controlling, amongst other functions, the vasomotor system.

In animals it is agreed by German writers generally that sensory fibres are blocked before motor fibres, though this observation appears to have been deduced from clinical and not direct experimental findings.

The writer has observed, when manipulating fractures of the hind limb of the dog under epidural anæsthesia, that sensations of pain disappeared before the muscles lost their spasm and became flaccid. Cuillé and Chelle[60] have noted that towards the anterior zones of an anæsthetised area in a dog loss of sensation is present but motor stimuli still persist. The same writers, discussing the development of epidural anæsthesia in the bovine, observe that in the case of the tail sensation is abolished before muscular control disappears.

Finally, Mennerat,[50] with reference to subarachnoid anæsthesia in the dog, says " Avec les doses faibles il-y-a souvent paralysie sensitive sans qu'il-y-ait pour cela paralysie motrice. L'attention et la sensation de contact sont conservées."

A selector action upon the nerve fibrils in animals would therefore appear to be demonstrable.

2. *Physiology of the fall in Blood Pressure.*—Normally the blood vessels of the body are subject to tonic constrictor impulses conducted by the sympathetic nerves. These impulses, which arise in the vasomotor centre in the medulla, travel down the cord to certain levels and pass out with the anterior (ventral) nerve roots to reach the sympathetic nerve trunk by way of the white rami communicantes. From here they are distributed to the blood vessels according to their destination.

In man the distribution is as follows:—

A.—The blood vessels of the head and neck are governed by fibres which leave the cord with the first four thoracic nerves and proceed by the sympathetic trunk to the head.

B.—The fibres supplying the upper extremity arise from the 4th to 10th thoracic.

C.—Fibres supplying the lower extremity and perineum arise from the 11th thoracic to 3rd lumbar and pass back by way of the sympathetic trunk to enter the radicles of the sacral plexus.

D.—Fibres to the viscera arise from the last seven thoracic and first three lumbar. They pass through the ganglia of the sympathetic trunk to the large abdominal ganglia whence fibres arise to supply the visceral blood vessels. These fibres, after leaving the nerve roots, form in part the splanchnic nerves, the most important vasoconstrictors of the body. Section of the splanchnics is followed by dilatation of the visceral arterioles—the so-called splanchnic pool, to which most of the blood drains, and a great fall in blood pressure ensues. From this one can understand the vasomotor collapse which follows if the nerve roots connected with the splanchnic area are blocked.

Thus in man blood pressure changes during spinal anæsthesia are briefly as follows:—

1. A main fall, depending on the extent of the anæsthesia; the greater the number of nerve roots controlling the " splanchnic pool " which are blocked the greater the fall in blood pressure. Thus the higher the anæsthesia extends above the third lumbar the more pronounced is the fall in pressure.
2. The respiratory action of the muscles of the thorax and abdomen is suppressed but compensated for by increased diaphragmatic action; this results in a reduction of the aspiratory action of the thorax and less blood reaches the heart.
3. In extensive anæsthesia the sympathetic supply to the heart is blocked. The uncontrolled vagus action then slows the heart.

In the domestic animals since a similar nervous mechanism is present analogous results may be expected. Smith[61] refers to the importance of the splanchnic area as a vasomotor mechanism in herbivora. In the dog the splanchnic system has been worked out by many experimenters. Evans[46] states : " animal experimentation has shown that if the spinal cord is cut at the level of the first thoracic segment the maximum lowering of blood pressure occurs. If it is cut at the level of the sixth thoracic segment a drop in blood pressure follows but not to the degree observed when the cord is cut at or above the first thoracic segment. Similarly it has been shown that when the spinal cord is cut at or below the level of the first lumbar segment there occurs, after eliminating the effect of shock, no fall in blood pressure." It is evident that the same results may be obtained by artificially blocking the corresponding anterior nerve roots or white rami communicantes. Therefore in animals the more extensive the nerve block the greater the blood pressure

fall, and since the blocking of the splanchnic nerves is the chief factor in this it is important to know their exact origin. According to Sisson,[51] they arise as follows :—

A. Horse. Greater Splanchnic Nerve ; 5th or 6th–13th or 14th thoracic.
Lesser Splanchnic Nerve ; last three thoracic.
The anterior lumbar also contribute to the cœliac plexus.

B. Ox. Greater Splanchnic Nerve ; 5th or 6th thoracic–14th thoracic.
Lesser Splanchnic Nerve ; probably by filaments from the first lumbar ganglion.

C. Dog. Greater Splanchnic Nerve ; frequently springs from 12th thoracic ganglion.
Lesser Splanchnic Nerve ; last thoracic and first lumbar.

Bradley[47] in a diagram of part of the sympathetic nervous system shows the same origin ; Smith,[61] however, in a diagram by Foster (p. 235) shows the following origin :

Splanchnic major ; Thoracic 6–thoracic 13.
Splanchnic minor ; Lumbar 1–lumbar 2.

Generally speaking, therefore, a serious fall in blood pressure is only to be expected when anæsthesia extends *in front of the first lumbar segment.* The more extensive the blocking of the nerve roots in front of this level the greater the fall. If the first thoracic roots are involved the cardiac sympathetic rami will become blocked and the inhibitory effect of the vagus will decelerate the heart. Such phenomena are only to be looked for in the dog and cat. Operations demanding so extensive an anæsthesia are rare in the larger animals, apart from the fact that the large quantity of solution to be injected makes other and simpler forms of anæsthesia desirable.

3. *Physiology of the Slowing of the Heart.*—Two sets of extraneous nerves control cardiac activity. One set, the accelerator or augmentor group, arise in man from the first four thoracic segments of the cord and pass out with the anterior nerve roots to form the sympathetic cardiac nerves. The second set, inhibitory in action, arise in the medulla, become at once extra-dural in the vagus trunk and so reach the thorax. The interaction of these two nerve supplies adjusts the heart to external influences. According to Evans, the heart rate during subarachnoid anæsthesia in man is affected as follows:—

(*a*) If the nerve roots arising from the first four thoracic segments are bathed in anæsthetic the sympathetic or accelerator fibres to the heart become more or less blocked. The vagus is thus left unopposed to restrict the heart rate which varies inversely as the height and degree of anæsthesia.

(*b*) The blood pressure, already reduced, together with the reduction in. rate of the heart beat, leads to a bulbar and cardiac anæmia. This results in a further slowing of the heart.

(*c*) Intercostal and abdominal muscular paralysis decreases both the aspiratory effect on the vena cava and intra-cardiac pressure. Both these factors may conceivably contribute to a further reduction in heart rate.

In animals the control mechanism of the heart is similar. In the horse, according to Sisson, the vagi give off cardiac rami and " these concur with the cardiac branches of the sympathetic and recurrent nerves to form the cardiac plexus which innervates the heart and great vessels." The same writer describes no differences in the ox and pig. Bradley[47] says that in the dog " one or two cardiac rami (accelerator to the heart) leave the ganglion " (*i.e.*, the first thoracic ganglion of the sympathetic trunk). The cord segments from which the sympathetic accelerator nerves arise are not clearly laid down, but from anatomical descriptions the last cervical segments and the first few thoracic are chiefly concerned. Thus if an anæsthetic solution in the epidural space bathes the nerve roots at this level the augmentor mechanism to the heart will be more or less cut off and slowing of the heart will ensue. This is only likely to occur in the dog and cat where extensive anæsthesia is occasionally necessary.

4. *Physiology of Decreased Respiration.*—The respiratory centre in the medulla co-ordinates the movements of the several respiratory muscles—abdominal, diaphragmatic, and intercostal, together with those of the neck, larynx, nostril and mouth.

In man the action of these muscles is suppressed in proportion to the extent of anæsthesia, commencing with the abdominal muscles. extending to the intercostals and later involving the diaphragm through the phrenic nerves. A cessation of respiratory movement may finally occur.

In advanced epidural anæsthesias in animals similar phenomena may conceivably be induced. The writer has noted abdominal and partial intercostal paralysis in the dog during laparotomies under epidural anæsthesia. Suppression becomes dangerous with involvement of the phrenic nerve roots. These have the following origin :—

A. Horse. (Sisson) 5th cervical (inconstant), 6th cervical, 7th cervical.
B. Ox and Pig. No variations are noted by Sisson.
C. Dog. (Bradley) 5th, 6th and 7th cervical.

It is thus obvious that only in extensive anæsthesia will diaphragmatic function be affected.

An extreme example of abolition of cardiac and respiratory function is the experiment by Hodgkins[64] in which 50 c.c. of " Percaine " were

injected into the Cisterna magna of a mule: "Respiration ceased in three minutes and the heart in six minutes."

5. *Physiology of Increase in Peristalsis.*—In man the bowel is under the control of a triple nervous mechanism—the myoenteric, the sympathetic and the parasympathetic. The myoenteric system, also known as the plexus of Auerbach and Meissner, is a primitive reflex in the muscular wall of the bowel. It has, as Evans says, practically one reaction, contraction above and relaxation below points of stimulation. The sympathetic system exercises a tonic inhibitory effect on the gut. It arises from the central nervous system and issues from the lower thoracic and upper lumbar segments of the cord, an origin similar to that of fibres sending stimuli to the visceral arterioles. The parasympathetic system is two-fold. Fibres arising in the mid-brain, pass out in the vagus trunk, thus becoming extra-spinal and supply the small bowel, and the ascending and transverse colon. A second set of fibres leaves the cord by way of the second, third and fourth sacral roots and, as the pelvic nerve, supplies the remainder of the colon, the rectum and uro-genital system.

The effect of spinal anæsthesia on these systems is firstly to block the pelvic nerve and produce relaxation of the anal sphincter. As anæsthesia advances the sympathetic fibres issuing from the spinal cord are progressively blocked. This leaves the vagus and myoenteric systems unopposed to produce increased peristalsis.

In animals, anatomical, physiological and clinical evidence suggests a closely similar nervous mechanism. In the dog, in particular, the innervation of the digestive tract has been worked out chiefly by the experimental physiologists (see figure by Foster in Smith's Physiology[61]) and is analogous to that described in man. Clinically, a quite similar series of phenomena are to be observed during the progress of epidural anæsthesia. In the cow, for instance, relaxation of the anal and vulval sphincters appears soon after an injection. The rectum and posterior colon become tensely ballooned but not flaccid. This probably represents blocking of the spinal roots of the internal pudendal (pelvic) nerves without affecting the abdominal sympathetic ganglia. Moreover, in the dog, Alsina[52] and others have shown that spinal anæsthesia is followed by an almost immediate increase in intestinal peristalsis, which lasts a considerable time. The writer has noted during laparotomy on the dog under epidural anæsthesia, a state of tonic contraction of the gut apparently the result of sympathetic block. The writer is unaware of experimental or other work on the modifications in peristalsis that may occur in the larger animals. Anæsthesia extensive enough to affect the sympathetic supply to the bowel in the horse or ox is rarely employed so that opportunities for clinical observation are not frequent.

6. *Dilatation of the Vagina and Uterus.*—This is best observed in the cow. An epidural injection is soon followed by flaccidity of the vulval sphincter and ballooning of the vagina; if the zone of anæsthesia is extensive a ballooning of the uterus also occurs. Sensory impulses in each case are abolished. These phenomena are associated with the blocking of the spinal roots of the internal pudendal nerve or parasympathetic supply. It would appear that the sympathetic supply remains unaffected, or at least not totally abolished, and so the inhibitory mechanism remains to induce dilatation.

7. *The Bladder*, according to Cuillé and Chelle,[60] becomes contracted. Hodgkins,[64] working with subarachnoid injections in equines, mentions involuntary contraction of the bladder in a mare five minutes after the onset of anæsthesia.

Post-Puncture Leakage

It is probable that leakage of the solution occurs through the perforation in the interarcual ligament after epidural injection.

From the observations made by Frasier and Peat,[62] Brook[56] and Weed and Hughson,[63] leakage from the subarachnoid space to the outside appears to depend upon (*a*) the tension of the perforated ligament and dura; (*b*) the pressure of the fluid within.

Similar conditions apply to leakage of fluid when injected epidurally. The interarcual membrane is stretched during the operation in several animals, *e.g.*, lumbo-sacral puncture in the dog; the fluid, at least immediately after injection, is under pressure, since not only will it regurgitate into the syringe if pressure be taken off the piston but will return through the needle if the syringe be detached.

The following rules should be therefore observed:—

A.—After an injection is completed reinsert the stilette and leave the needle in position for a few minutes. This allows internal pressures to adjust themselves and the injected fluid to percolate through the epidural fat.

B.—Relax the perforated ligament as soon as the needle is withdraw and so aid in the closure of the needle hole. Thus in the case of the ox or horse the tail should be held horizontally for a few minutes, whilst the dog should be released from the position of spinal flexion.

COMPLICATIONS AND THEIR TREATMENT

From what has been said concerning the phenomena accompanying epidural anæsthesia it is apparent that vasomotor collapse and/or respiratory depression may develop during anæsthesia; and that the farther the anæsthesia advances anterior to the first lumbar segment the greater

the fall in blood pressure and interference with respiratory movement.

It is only in the small animals that the nerve roots anterior to the lumbar region are blocked. Indications for such anæsthesia are much rarer in the large animals and, moreover, the larger amounts of solution necessary render other forms of anæsthesia desirable.

1. *Vasomotor Collapse.*—In man, adrenalin is the most effective antidote to blood-pressure fall and diminution of heart action. The action of adrenalin has been studied also in animals (Cushney,[58] Greig,[28] Evans[46]). Whilst the action on certain organs (*e.g.* uterus) varies with the species, its action on the vasomotor system and heart appears to be similar in dog, cat and man (see below). On these grounds, in the absence of definite clinical research, adrenalin is recommended as an antidote in the domestic animals.

It is proposed to review (*a*) the mode of action of adrenalin, (*b*) its effect on the circulation and (*c*) its mode of administration.

(*a*) Adrenalin acts upon the sympathetic myoneural junctions. Thus, although motor impulses to the blood vessels of the limbs or viscera are blocked by the anæsthetic solution, adrenalin is still enabled to act and exert an effect equivalent to stimulation of these nerves.

(*b*) The Effect on Circulation. Intravenous injection of adrenalin is followed by a marked rise in blood pressure chiefly due to the constriction of vessels in the abdominal cavity. Cushney,[58] referring to experiments that must have been carried out on animals, says that "the sudden increase in pressure occurs after . . . section of the splanchnic nerves"; these experimental conditions are exactly analogous to those obtaining when the splanchnic supply has been blocked in spinal anæsthesia. Furthermore, adrenalin accelerates the heart by stimulating the sympathetic augmentor myoneural junction. Cushney presents a tracing showing these effects in the cat.

(*c*) Mode of Administration. Adrenalin injected subcutaneously has only a local action. Evans remarks that "in rats forty times the lethal dose can be given subcutaneously without any dangerous reactions." Subcutaneous injection brings about no vasomotor effects. The procedure by Hodgkins[64] of subcutaneous injection of 12–20 drops of 1 - 1,000 adrenalin solution has no physiological support. (His suggestion, put forward more as an afterthought, of intra-muscular injection is more likely to be of value.) Intramuscular injection usually, but not always, effects an increase in blood pressure, the drug then being absorbed more rapidly (Cushney). The intravenous route is the best. In all cases of epidural anæsthesia where nerve roots in front of the second lumbar are to be blocked a preliminary intra-muscular injection of adrenalin is to be recommended. Should signs of vasomotor collapse supervene an intravenous injection of adrenalin in saline must be carried out.

Procedure: Adrenalin is available as a solution of the chloride (1 - 1,000). The following amounts should be used intramuscularly :—

Horse and cow	..	10 c.c.
Sheep	.. ..	1 c.c.
Dog	.. ..	0·2 c.c.–0·5 c.c.
Cat	.. ..	0·1 c.c.–0·3 c.c.

In the small animals the rectus femoris muscle is a convenient site.

For intravenous administration a saline solution containing two drops of adrenalin solution per 100 c.c. may be held in readiness. This can be quickly gravitated into the external jugular in the case of the dog and the process stopped as soon as an effect is apparent. Very small amounts of the drug are required to raise blood pressure, 1/1,000 m.g. often sufficing in the dog (Cushney).

It should be mentioned that Hatcher and Eggleston[59] showed that the vasomotor effect of adrenalin was increased when injected intravenously along with novocaine. Thus it is probable that when novocaine is used as a spinal anæsthetic the action of a subsequent injection of adrenalin is as great as, if not greater than, in the normal animal. Finally, it should be pointed out that the action of adrenalin on the uterus may be of clinical importance in the case of the pregnant female. According to Cushney[58] adrenalin generally relaxes the uterus of the non-pregnant cat; in the pregnant animal it causes contraction; in the bitch, on the other hand, a primary contraction is followed by relaxation and inhibition.

References.—A complete list of references will appear at the end of the concluding portion of this paper.

(*To be continued.*)

THE BENEVOLENT FUNDS

To commemorate the happy coincidence that this year Mr. G. H. Locke is President of the Royal College of Veterinary Surgeons and his son, Mr. R. C. Locke, is President of the Lancashire Division of the National Veterinary Medical Association, the wives of these two members have organised an effort in aid of the Benevolent Funds of the profession. This took the form of the sale of a hand-made rug, the right to purchase which was limited to subscribers of 6d. or more to the Fund. There have been so many subscribers that the sum of £50 has been realised and this has been divided equally between the National Veterinary and Mutual Defence Society and the Victoria Veterinary Benevolent Fund. At a small Bridge Drive held at the residence of Mrs. G. H. Locke on May 1st, the right to purchase the rug was awarded to Miss Isa P. Brown of Perth.

Annotation

CLINICAL SCIENCE

The Huxley Lecture delivered at the University of Birmingham by Sir Thomas Lewis, C.B.E., M.D. (*Lancet*, March 30th, 1935), had for its title "Clinical Science within the University," and it is a plea that the subject should find its place and acquire a proper status within the university. What exactly is meant by the term clinical science? Sir Thomas makes it quite clear that it infers not only clinical medicine and clinical surgery as they are practised, but includes activities which might be considered to come under physiology and pathology. "Whilst the distinction between the science and the art of medicine is intentional and they should be regarded as separate directions of human endeavour in working to practical ends, it must not be inferred that both cannot be pursued by one person. The science, however, must be unhampered in its movements, the boundaries between the individual sciences may not be rigidly maintained without hindering progress. Overlaps between clinical science, pathology and physiology are vital to medicine as a whole; they bind together three activities which in the process of time have grown too far apart from one another."

If these remarks apply to medicine, it is certain that they apply with equal, if not much greater, force to veterinary medicine. The object of clinical science is clinical research, and whilst the central field will be the individual patient, the activities of the worker engaged in it must include the physiology, morbid anatomy, bacteriology, together with experimental therapy. It is undeniable that the tendency in veterinary teaching in this country, has been for the clinical teacher to confine himself to those aspects of medicine and surgery as they are practised, research being entirely in the hands of the pathologist, who has tended to limit his activities to the morbid anatomy and bacteriology of the cadaver. There has not been that close intercourse between the two so essential to advancement. Research institutes have, very rightly, been chiefly concerned with preventive medicine. It may be asked, has clinical advance kept strides with that of the associated sciences? If the answer is no, why is it so? It lies in the plea contained in Sir Thomas Lewis's address.

The basis of research is experimentation—a word regarded with great confusion, not only by the lay public but by many of ourselves. It is enlightening to follow Sir Thomas's observations on the subject: "It should be manifest that whenever we interfere with a patient, as when we employ a test of a patient's reaction to something introduced from without, to exercise, to a foodstuff, or to any other substance, or to any physical stimulus, we experiment. Every remedy employed in medicine to-day is the result of experimentation on man, every new remedy we shall employ in the future, must inevitably pass through the experimental stage." The hands of those engaged in clinical science must not be tied, they must be at perfect liberty to employ new therapeutic measures inspired by the study of their clinical problems.

It may be said with justification that too much of the time of the clinical workers in the schools is occupied by routine work, which, by its quantity, prevents that careful study of individual cases so essential to advancement. It is an evil difficult to overcome, but it serves to emphasise the necessity for specialisation rather than generalisation in the schools, and closer co-operation between them and the practitioner.

So frequently the complaint is made that the student, as turned out by the school to-day, is not practical. The cry is by no means a new one nor is it confined to our profession. It, and similar complaints, have been made of the younger by the older generation since the world began. We are, however, entering on a new régime; under the new five years' course of the R.C.V.S., pupilage with a practitioner is essential. The practitioner now shares with the schools the responsibility of instructing the student in the practical art. May this, by relieving the school of a part of its obligations, enable it to treat clinical science on a basis similar to physiology, pathology, and the allied sciences.

J. G. W.

Corrigenda

We have received from Dr. J. F. Tocher, of Aberdeen, whose absence on holiday unfortunately prevented the return of proofs sent him for revision, the following corrections of his paper "The Proportions of Certain Poisonous Substances in Feeding Stuffs and their Effect on Livestock," published in our issue of April 27th:

Page 478, column 1, line 20 (Section "b"), *read* "7" for "7·5"

Page 478, column 2, lines 37 and 38, instead of the words "of the highest proportion" *read* "0·18 per cent."

Page 478, column 2, line 46, for "six" *read* "eight."

Page 479, column 1, line 23, delete the words "the glucoside and of"

Page 480, column 1, line 17, insert after the words "·0006 milligramme" the words "of ricin".

Page 480, column 1, line 18, delete the words "of ricin" and insert "weight of animal".

Abstracts

[Control of Tuberculosis with B C G Vaccination. Tenhaeff, C. (1934.) *Tijdschr. Diergeneesk.* *61.* 14. 735-749.]

Vaccination experiments were carried out on 466 cattle belonging to five farms. The herds were all heavily infected with tuberculosis and during the course of the investigation no attempt was made to preserve vaccinated animals from contact with infection either by methods of segregation or the feeding of tubercle-free milk to calves. Of 466 animals, 160 were examined fully *post-mortem.* In ten cases [7·6 per cent.] evidence of tuberculosis was found; these animals had all received from three to seven inoculations of B C G vaccine. In most cases only minimal lesions were found. The autopsy was negative in 38 out of 48 animals which had received three doses, in 22 which had received two doses and in 61 which had received only one dose of vaccine.

The author concludes that he has demonstrated the immunising value of B C G vaccine, and that such vaccination alone can clean heavily infected herds. At the same time, he advocates the combination of vaccination with hygienic methods of control.

E. J. P.

* * * * *

[Immunisation Experiments on Calves with B C G. Griffiths, A. S., Buxton, J. B., and Glover, R. E. (1935.) *The Lancet.* *228.* 5817. 451-457.]

To ascertain the duration of immunity to tuberculosis produced in calves by the intravenous administration of B C G vaccine, 21 calves were vaccinated and eight were retained as controls. In order to study the value of re-inoculation with a view to renewal of immunity, a further 19 calves and six control animals were used. Of the 40 vaccinated animals, three received a single intravenous dose of ten mg., the remainder received in addition a second dose of 100 mg., three to four weeks later. Vaccinated calves showed pyrexia, particularly after the second dose and there was a tendency towards respiratory distress, whilst one calf died as a result of pulmonary consolidation, probably due to the vaccination. Immunity was tested by feeding standard doses of virulent tubercle bacilli after varying intervals, *post-mortem* examinations being carried out after a suitable incubation period.

After three months two calves were completely resistant; after six months four calves were resistant and one showed slight lesions in the mesenteric glands; after nine months five were resistant and two showed slight local lesions; after 12 months one was resistant, four showed local lesions and in two cases infection was beginning to spread. All control calves showed either localised or spreading lesions of tuberculosis.

Experiments upon the value of revaccination six, nine and twelve months after the first course of treatment prolonged the duration of immunity to a small extent.

The authors conclude that complete immunity against oral infection with tubercle bacilli can be conferred upon calves by the intravenous inoculation of B C G. The immunity lasts a variable time—under the conditions of the present experiment from six to twelve months. Revaccination with 100 mg. of vaccine restored immunity, but protection was complete in a smaller number of calves than after primary vaccination.

E. J. P.

* * * * *

[I.—The Susceptibility of Chickens to Human and Bovine Tubercle Bacilli; II.—Pathological Changes induced by these Bacilli. Feldman, W. H. (1934.) *Amer. Rev. Tuberc.* April, 1934. 400-423.]

It is generally accepted that the domestic hen is highly resistant to the organisms of tuberculosis of human and bovine origin, the tissues presenting an enviroment which is biologically unsuited to their growth—a fact which is of value in distinguishing these types from the avian form.

Nevertheless, the author was able to show that by injecting bacilli by different routes, a morbid process could be established, which, as one might expect, was self-limiting and never widespread or malignant, soon attaining its maximum effect and then retrogressing. Except in one instance the lesions which developed were microscopic and were produced in the brain by intracerebral inoculation and in the liver and spleen by intravenous injection.

It was observed that the bacilli responsible for these lesions eventually became incapable of growth on culture media and were no longer capable of producing lesions in guinea-pigs.

Photomicrographs are given illustrating the lesions produced in the various organs.

N. S. B.

* * * * *

[The Size of the Virus of Poliomyelitis as determined by Ultrafiltration. Elford, W. J., Galloway, I. A., and Perdrau, J. R. (1935.) *J. Path. Bact.* *40.* 135.]

The evidence obtained in the experiments described in this paper led to the conclusion that the filtration end-point of the virus of poliomyelitis ("infantile paralysis") is 25 mμ [*i.e.*, the virus is held up by collodion membranes having an average pore diameter (A.P.D.) of 25 mμ or less] and the probable

size value is therefore 8 to 12 mμ. This is also the estimated size value of the virus of foot-and-mouth disease [see Galloway, I. A., and Elford (1931.) *Brit. J. Exp. Path.*, *12*, 407] and the smallest bacteriophage so far studied S13 [see Elford, W. J., and Andrewes, C. H. (1932.) *Brit. J. Exp. Path.*, *13*, 446]. [It is of interest that the relationships of the individually determined size values for viruses and phages have received certain confirmation in the resolution of mixtures which may be affected by filtration through chosen membranes. Such experiments with louping-ill virus mixed with phages C36 and S13 have been described by Elford, W. J., and Galloway, I. A. (1933) (in *J. Path. Bact.*, *37*, 381); the experiments demonstrated convincingly that C36 phage is larger than louping-ill virus which in turn is larger than the S13 phage referred to above. This agrees with their individually determined sizes 20 to 30 mμ for C36 phage, 15 to 20mμ for the virus of louping-ill and 8 to 12 mμ for S13 phage. It has also been found possible to separate the virus of foot-and-mouth disease from a mixture of that virus and C36 phage, the individually determined sizes being 8 to 12 mμ for the virus and 20 to 30 mμ for the phage.]

The small size of the virus of poliomyelitis is in keeping with certain of its physical properties. Amoss (1928) found that the virus can penetrate congealed gelatin under pressure and further the virus cannot be differentially centrifuged in the manner possible with vaccinia virus for instance; facts which suggest a very minute particle size.

[Note may be made of the fact that this paper was sent to press in September, 1934, and appeared in the January, 1935, number of the journal. In December, 1934, Theiler and Bauer, *J. Exp. Med.*, *60*, 767, published a paper in which they recorded similar observations to those described above on the size value of the virus of poliomyelitis. The collodion membranes which they employed were made by the technique described by Elford, W. J. (1931) [in *J. Path. Bact.*, *34*, 505]. The very close agreement in the results obtained independently by two groups of investigators demonstrates very clearly the reproducibility of the collodion membranes made by Elford's method and their value in filtration studies with viruses].

I. A. G.

* * * * *

[**Investigations upon Hormonic Diagnosis of Pregnancy in the Cow.** Ocariz, J., and Gilsanz, L. (1934.) *Ann. Rep. Inst. Anim. Biol. Span. Repub.* 236-253.]

The diagnosis of pregnancy in the cow by the method originated by Zondek and Aschheim, namely, the observation of the effect of intravenous inoculation of urine on the ovary in young rats, is not applicable to the cow because the hormone is present in the urine in very small quantities. The authors have evolved a method which requires a smaller number of experimental animals and in which the appearance of actual œstrus is not essential in order to obtain positive results. 200 c.c. of urine is acidified to 10 per cent. with hydrochloric acid, and is then boiled until reduced to half its original volume. It is then cooled, filtered through paper, and 5 c.c. of olive oil added. It is shaken for half-an-hour, left for 15 minutes and the oil recovered by repeated centrifuging. Two adult, female, castrated rats are injected subcutaneously with 1 c.c. of the oil. The injection is repeated after 24 hours. Forty-eight hours after the first injection, smears of vaginal scrapings are examined, and if a negative result is obtained a further scraping is taken 24 hours later. A reaction is considered positive when the diœstrus period disappears, even though actual œstrus does not appear. The interpretation of the smears depends on the appearance of the cellular elements (microphotographs of smears from rats in diœstrus, metœstrus and œstrus are included). No change from the appearance typical of diœstrus was noted in rats injected with urine from 24 non-pregnant cows; 50 per cent. of samples collected during the first month of gestation were positive, 80 per cent. were positive in the second month, 90 per cent. in the third month and 100 per cent. in the remaining months. The tests were carried out on 121 samples of urine collected in a slaughterhouse and the stage of pregnancy was estimated from the size of the fœtus.

R. S. R.

* * * * *

[**Some Morphological Variations of *B. anthracis*.** Garcia, I. (1934.) *Ann. Rep. Inst. Anim. Biol. Span. Repub.* 60-87.]

The author's experiments show that anthrax bacilli may exist in the blood as Gram-positive granules, chains of Gram-positive cocoid forms or as Gram-negative bacilli. These forms could also be obtained in cultures containing blood, glucose or pulped tissue. The streptococcal and bacillary forms were found to be of low pathogenicity for laboratory animals and this has suggested the view that these forms may correspond with variants of *B. anthracis* which have been described. A number of excellent microphotographs appear in this paper.

R. S. R.

* * * * *

[**The Spread of Rabies to Horses and Cattle in South Brazil by Bats.** Haupt, H. (1934.) *Tierärztl. Rdsch.* *40*. 38. 658-659.]

The author gives a brief résumé of the work which has led up to the recognition of a certain

disease of cattle and horses as being rabies. It has been established, beyond all reasonable doubt, that the virus concerned is true rabies virus though it differs from the classical "street virus" of Pasteur in certain minor respects. An interesting feature of the condition is the mode of transmission of infection from animal to animal. One of the ways in which this occurs is through the agency of blood-sucking bats which transmit infection in the process of feeding on animals.

E. J. P.

* * * * *

[A Clinical Study of Bovine Twins and Freemartins. Williams, W. L. (New York Sta. Vet. Coll.) (1933.) *Ind. Vet. J.* *10.* 90-107. 8 figs.]

It should be emphasised at the outset that this paper is not summarised. It does not lend itself readily to a brief abstract, since much of the argument hinges upon the published case records of the author himself, while he draws very freely upon other publications. Some 33 references are given. The paper contains much more relevant information on reproduction in cattle than might be gathered from its title.

Following a detailed description of instances in which the occurrence of twinning in individual cows and in herds is shown to be correlated with a high proportion of irregularities in œstrus, pregnancy or parturition, and frequently with difficulty in subsequent breeding, the author emphasises his previous conclusion that twinning in cattle is "pathologic." [Note.—This word is not synonymous with "pathological."] He describes evidence which proves that in bovine twins anastomosis of the fœtal vascular systems occurs very frequently, if not always, in bicornual twins, and always in unicornual twins so far as is known, and that a similar fate is shared by both members of the twins. If one dies *in utero* the other also perishes, while bovine twins, unlike the twins of horses or the smaller ruminants, nearly always resemble each other in size, vigour and health after birth. The communal vascular supply of bovine twins is regarded as a means whereby the growth and development of each can be stabilised in relation to its co-member, and it is pointed out that relative sizes of individual members of twins and triplets in unipara are dependent upon the ability to adjust a balance between placental contact and space available: the poor adjustment of vascular supply in the mare and the absence of anastomosis results in the imperfect development or the death of that member of the pair which receives least nutritive supply, while in cattle the vascular anastomosis ensures the greatest possible uniformity in size, etc., of the twins.

There follows a discussion of the well-known hypothesis put forward by Lillie and Keller and Tandler, that the freemartin calf is genetically a female which, owing to admixture in its blood stream (through vascular anastomosis) of male hormones from a co-twin bull calf, evolves intersexually into an individual with developmentally arrested female genital organs. The author suggests that "further studies seem to justify a proposal to modify this hypothesis and to correlate twinning and freemartins as an integral part of a comprehensive mosaic of the pathology of reproduction." After considerable argument which, in relation to the above hypothesis, is at times difficult to follow, the author proposes a modification as follows: "the freemartin is the product of an imperfect twin ovum, discharged by a diseased ovary. The defective ovum is incapable of independent development but may live as a parasite upon a sex-potent ovum in any mammal where fusion of the two chorions may occur and vascular anastomoses become established."

A proposed scheme of five *Orders* in the chain of antenatal pathology of the reproductive system follows, and the paper ends with suggestions for the control of bovine freemartins and twins. These are essentially based upon proper methods of management and rearing of dairy calves to avoid subnormal levels of growth and development and poor health; they also include postponement of post-parturient breeding until the genital organs have had adequate time to regain normal equilibrium, and the avoidance of breeding from all cows showing clinically recognisable ovarian disease, irregularities of œstrus or nymphomania.

[Many will undoubtedly not feel disposed to agree with the suggestions, theories or conclusions of the author, and it is indeed exceedingly difficult to reconcile some of the statements made with modern knowledge of the rôle played by the male sex hormone in the differentiation of secondary sexual characters. To the reviewer, it seems a little unfortunate that two separate aspects of the subject appear to have been somewhat confused. The author's views on questions relating purely to vagaries of germ plasm and somatic tissues are undoubtedly coloured by his extensive experience of the clinical aspects of reproductive pathology in cattle. At the same time it must be admitted that the whole question of intersexuality in domesticated animals urgently demands a thorough reinvestigation in the light of the mass of knowledge now available concerning the male and female sex hormones; this paper serves to illustrate the urgency of these demands.]

W. C. M.

[Simple Fractures and Fissures of the Claw Bone (Third Phalanx) in Cattle. Liess, J. (1934.) *Tierärztl. Rdsch. 40.* 35.]

The author is assistant to Professor Goetze at the Clinic for Cattle Diseases at Hannover Veterinary College. He gives a full description of a condition which has not yet been dealt with in detail by German authors.

Occurrence.—Fissures or fractures of the claw bone in cattle occur always in cattle free at pasture and never in stall-confined animals. They affect only the fore feet and nearly always the inner claw, which bears most of the weight.

Cause.—Sudden trauma due to miss-steps on hard ground.

Symptoms.—Sudden "supporting leg" lameness with nearly complete inability to take a step on the affected limb. If forced to move, the animal hops on the sound limb, merely placing the affected foot to the ground at the toe momentarily; in addition, the weight is put on the outer claw and the limb is carried and used in adduction to facilitate this: the fore legs may thus be crossed. An affected cow in recumbency is reluctant to rise.

Diagnosis.—The cause is traced to the hoof by the lack of evidence of injury higher up the limb and the site of injury is confined by passive movement of the claw, by percussion of the sole and by compression by pincers. The diagnosis of fracture or fissure may or may not be confirmed by X-rays, but a negative X-ray picture does not secure a negative diagnosis.

Lameness increases with sustained motion and with the animal staying out at pasture.

Prognosis.—Favourable for the life and usefulness of the animal.

Treatment.—Early cases may be completely cured by confinement for three to four weeks and by cutting short the wall of the affected claw. If spontaneous healing and restoration of function does not follow, the third phalanx may presumably be amputated. [The author does not mention this in his general theme, but refers to a case so treated in a supplementary case record.]

Six case records are given, in which three animals recovered completely after non-surgical treatment, the other three being killed owing to other conditions or complications.

Liess describes this injury as a definite and characteristic clinical entity, which, after the above description, ought to be quickly appreciated in general practice.

The fracture or fissure is characteristically transverse and opens above into the articular surface.

J. E.

[Developmental Abnormalities of the Rectum Associated with Similar Defects of the Urinary Organs. Belkin, G. J. (1934.) *Berl. tierärztl. Wschr. 50.* 19. 324.]

The author draws attention to the fact that while congenital defects such as atresia ani are relatively common, cases in which these conditions are associated with developmental errors of the urinary organs are rare. A point of practical importance in these latter cases is that surgical measures are of no value in remedying the defect. The author describes a case in which there were, in addition to developmental errors of the rectum and urinary bladder, horse-shoe kidneys, hydronephrosis and diverticulum recti. The subject was a three-day-old bull calf which, according to the owner, could not pass fæces. On examination the anus was absent and as surgical treatment was considered useless the animal was destroyed.

On *post-mortem* examination the end of the colon and the beginning of the rectum were dilated, forming a somewhat one-sided cavity. The intestine ended in a cone-shaped contraction from the point of which ran a thin cord-like structure to join the urinary bladder. Near the dorso-caudal end of the distended area of gut was an arch-shaped cavity which led to a firm process 3·5 cms. long. This process extended upwards and backwards and its blind end terminated in a spherical sac, the inside of which communicated with the lumen of the gut by a duct in the process supporting it. The serous membrane of the intestine was normal but the muscular coat showed a progressive thickening, reaching its maximum thickness (0·5 cms.) where the intestine entered the urinary bladder. The mucosa was thrown into well-marked folds. The contents of the lumen consisted of dark green, pulpy, somewhat viscous masses.

Histologically the bowel wall appeared normal except for a rather strongly developed muscularis mucosæ. At a point near the entrance of the intestine into the bladder the mucosa suddenly lost its typical structure and an epithelium of the stratified type commenced. The wall of the process supporting the spherical sac described above resembled the bowel wall, but there was a prominent amount of loose connective tissue in the muscular layer. The wall of the sac itself consists only of connective tissue, muscularis mucosæ and mucous membrane.

The urinary bladder was elongated and posteriorly was somewhat club shaped. It was at this club-shaped part that the cord-like continuation of the intestine entered the bladder. The wall of the latter was normal. The urachus was patent. Both kidneys were horse-

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shoe-shaped and their posterior extremities were joined together by a small furrowed bridge of kidney tissue. On hemisection hydronephrosis was found in both. The vascular system was abnormal in that each kidney had a multiple blood supply, and an account of this ends the description of the case.

In conclusion, the author refers to the literature on the subject of developmental errors of the rectum, bladder, etc., and discusses the aetiology of these conditions.

A. B. O.

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A. Leslie Sheather ...	2	2	0			
R. Simpson	2	2	0			
F. J. Taylor	2	2	0			
A. Spreull	2	2	0			
G. K. Walker ...	2	2	0			
J. Willett	2	2	0			
T. Dunlop Young ...	2	2	0			
W. S. Mulvey	2	0	0			
J. Macqueen	1	1	0			
A. W. Whitehouse ...	1	1	0			
				178	14	0
Other Members of the Profession.						
L. C. Tipper	105	0	0			
W. Woods	8	2	6			
P. Wilson	5	5	6			
P. Conacher	5	5	0			
T. F. Hall	5	5	0			
G. A. Banham ...	5	0	0			
R. C. U. Fisher ...	5	0	0			
W. Jackson Young ...	5	0	0			
W. J. Ironside ...	3	3	0			
C. Roberts	3	3	0			
H. E. Hornby ...	3	0	0			
E. P. Argyle	2	2	0			
H. W. Steele Bodger	2	2	0			
J. Clarkson	2	2	0			
H. S. Elphick ...	2	2	0			
J. R. Hudson ...	2	2	0			
W. K. Johnstone ...	2	2	0			
L. L. Leach	2	2	0			
W. R. McKinna ...	2	2	0			
Sir John Moore ...	2	2	0			
S. J. Motton	2	2	0			
M. E. Williams ...	2	2	0			
A. H. Hunter	2	0	0			
C. F. Richardson ...	2	0	0			
J. Anderson	1	1	0			
B. R. Body	1	1	0			
H. G. Bowes	1	1	0			
N. Brear	1	1	0			
A. Brownlee	1	1	0			
M. G. Byerley ...	1	1	0			
H. S. Caldwell ...	1	1	0			
J. L. Cormack ...	1	1	0			
J. J. Davies	1	1	0			
A. Douglas	1	1	0			
G. Durrant	1	1	0			
G. N. Gould	1	1	0			
H. Greenfield	1	1	0			
O. V. Gunning ...	1	1	0			
G. N. A. Hall	1	1	0			
H. G. Hewetson ...	1	1	0			
H. R. Hewetson ...	1	1	0			
H. T. Hughes	1	1	0			
T. R. Jarvie	1	1	0			
H. L. Jones	1	1	0			
J. M. F. Kinnear (Miss)	1	1	0			
W. Kirk	1	1	0			
T. J. Lindsay ...	1	1	0			
G. Lloyd	1	1	0			
R. C. Locke	1	1	0			
J. Loughran	1	1	0			
C. A. McGaughey ...	1	1	0			
J. G. McGregor ...	1	1	0			
G. C. Marginson ...	1	1	0			
J. C. Marginson ...	1	1	0			
H. T. Matthews ...	1	1	0			
G. Mayall	1	1	0			
G. M. Mitchell ...	1	1	0			
K. Ollerhead	1	1	0			
A. W. N. Pillers ...	1	1	0			
J. R. Rider	1	1	0			
I. L. Roberts (Miss)	1	1	0			
T. F. Spencer ...	1	1	0			
F. H. Stainton ...	1	1	0			
G. Sutton	1	1	0			
James H. Taylor ...	1	1	0			
A. G. Todd	1	1	0			
P. J. & J. A. Turner ...	1	1	0			
F. W. Willett ...	1	1	0			
J. Tweedale Edwards	1	0	0			
G. A. Tomlin ...	1	0	0			
A. F. Appleton ...		10	6			
E. L. Clarke		10	6			
T. Lishman		10	6			
J. H. McGhee		10	6			
A. J. Wilsdon ...		10	6			
G. B. Brook		10	0			
W. G. Edwards ...		10	0			
W. P. Moss		5	6			
H. M. Wilson		5	0			
				232	13	0
. . . . .						
XIth International Veterinary Congress, 1930. Balance in hands of Organising Committee transferred ...	117	6	6			
XIth International Veterinary Congress, 1930. Sales of Congress Reports ...	3	1	8			
Smith Memorial Fund. Balance in hand transferred	45	1	8			
				165	9	10
Grand Total ...				**£1,250**	**9**	**4**

Bequest to the "Victoria" Fund

Mr. Frank Shuttleworth Warburton, of Hale, near Liverpool, veterinary surgeon, who died on December 2nd, left estate of the gross value of £16,819, with net personalty £13,508. He left:—

£1,000 to the Victoria Veterinary Benevolent Fund; £1,000 to Warrington Infirmary to endow a bed to be called "The Margaret Warburton Cot"; £100 to Warrington Ragged School; £100 to Dr. Barnardo's Homes.

VICTORIA VETERINARY BENEVOLENT FUND

MEETING OF COUNCIL

A meeting of the Council of the Victoria Veterinary Benevolent Fund was held at 10, Red Lion Square, London, W.C.1, on Wednesday, April 3rd, 1935, when the following members were present :—Lieut.-Colonel J. W. Brittlebank (President) in the chair, Dr. O. Charnock Bradley, Professor J. B. Buxton, Professor J. F. Craig, Messrs. G. H. Livesey, G. H. Locke, J. W. McIntosh, G. P. Male, W. Nairn, Mrs. M. Nickinson, Lieut.-Colonel P. J. Simpson, Messrs. J. Willett, W. Woods, Professor G. H. Wooldridge and Lieut.-Colonel T. Dunlop Young.

The minutes of the previous meeting, having been published, were taken as read and signed as correct.

Correspondence

(*a*) The Secretary read letters of apology for absence from Major F. L. Gooch, Mr. J. Ewing Johnston, Major C. W. Townsend, Captain Sidney Villar and Mr. W. Jackson Young.

(*b*) Mr. W. Jackson Young made the suggestion that an extra effort should be made during this Jubilee Year to alleviate the lot of many deserving relatives of veterinary surgeons who are in want, and that he would himself be prepared to issue a special appeal to the veterinary surgeons in Scotland for support to the Fund. It was resolved to accept Mr. Young's very kind offer.

(*c*) A letter was also received from the Secretary of the Veterinary Medical Association of Ireland stating that the Association had decided to circularise all the members of the profession in the Irish Free State, suggesting that every member who is not already a subscriber should send a contribution of at least 5/-. In the case of members of the Association it had been decided to levy the subscription of 5/- along with the annual subscription of 10/6 to the Association. The Secretary was instructed to convey to the Veterinary Medical Association of Ireland the cordial thanks of the Council for this very practical way of helping the Fund.

(*d*) Letters from the Secretary of the Victoria Veterinary Benevolent Fund Ladies' Guild were submitted, transmitting cheques amounting to £103 11s. 0d., made up as follows :—

	£	s.	d.
Proceeds of dance held in London in February, 1935	35	0	0
Proceeds of a whist drive arranged by Mrs. Craig of Dublin	24	0	0
Proceeds of a dance arranged by Mrs. McLean of Belfast	44	11	0

The Secretary was instructed to convey to the Ladies' Guild the very grateful thanks of the Council for this splendid gift.

(*e*) A letter was received from Mr. Knight, Secretary of the National Veterinary Medical Association, stating that the accounts of the British National Committee of the 12th International Veterinary Congress having been audited it had been decided to divide the balance in hand between this Fund and the National Veterinary Medical and Mutual Defence Society, the amount due to this Fund being £6 0s. 3d.

It was resolved "That the cordial thanks of the Council be transmitted to the British National Committee for their generous gift."

Election to Council.—The Secretary reported that he had informed the Secretary of the Victoria Veterinary Benevolent Fund Ladies' Guild that the Guild was entitled to nominate a member of Council and he had received an intimation that Mrs. Nickinson had been nominated to act in that capacity for the time being. He had therefore sent an invitation to Mrs. Nickinson to attend the meeting.

The President thereupon expressed the pleasure of the Council at her nomination and gave her a cordial welcome.

Secretary's Report

The Secretary submitted the following report of new and increased subscriptions and donations received during the past quarter which was approved :—

Subscriptions

	£	s.	d.
J. A. Flynn		10	6
A. J. Hughes		10	6
J. M. Murphy	1	6	0
Royal Counties V.M.A. (increase)	2	2	0
A. P. Steele	1	1	0
W. F. White		10	6
	£6	0	6

Donations

	£	s.	d.	£	s.	d.
Collecting Boxes.						
Central Veterinary Society ...	3	18	0			
Major C. G. Saunders		12	0			
Scottish Metropolitan Division ...	1	10	6			
West of Scotland Division ...		15	6			
				6	16	0
Ayrshire Division N.V.M.A. ...				1	1	0
British National Committee, 12th International Veterinary Congress				6	0	3
G. Dunn (non-member)				1	1	0
Eastern Counties Veterinary Medical Association				5	0	0
Major T. H. Hobson				6	10	0
Home Pets Exhibition (per A. Cornish-Bowden)				15	0	0
Ladies Veterinary Benevolent Guild—						
Proceeds of Dance	35	0	0			
Mrs. Craig, Whist Drive ...	24	0	0			
Mrs. McLean, Dance	44	11	0			
				103	11	0
Louis Mitchell (legacy)				100	0	0
C. C. Nesling					10	6
Scottish Metropolitan Division N.V.M.A.				10	10	0
H. Stainton (Cruft's Dog Show)				15	0	0

Capt. H. A. Townley, Cairn Terriers Assn. (per A. Cornish-Bowden)	1	1	0
West of Scotland Division, N.V.M.A.	4	0	0
A. Whicher, "In memory of M.F.B."	2	0	0
	£278	0	9

Life Membership.—It was resolved "That Mrs. J. F. Craig and Mrs. A. McLean be elected Life Members of the Fund."

Annual Report.—The draft Annual Report was submitted and approved for issue to the members prior to the Annual General Meeting.

CASES

The Secretary submitted particulars of all the grants made to widows and other dependents of veterinary surgeons. In all, 42 cases were considered and in the majority of instances the grants already being made were renewed. In the following cases, however, the alterations indicated were decided upon :—

84. Widow, aged 54. The grant of 5/- per week to be discontinued.

96. Widow, aged 49. Six children. The grant of 10/- to be reduced to 5/- for the present quarter and to come up for reconsideration at the next quarterly meeting.

125. M.R.C.V.S. Aged 81. The grant to be increased to £1 per week.

166. Widow, aged 31. The grant to be increased to £1 10s. 0d. per week.

Investments—The Treasurer was authorised to invest the sum of £300, being the balance in hand in the Donations Account, in the purchase of suitable securities.

Frank Paxton, otherwise known as "Professor Frankeryn," proprietor of a flea circus, of the Simple Life Camp, Prestatyn, Flintshire, who was alleged by a Royal Society for the Prevention of Cruelty to Animals inspector to have kept several Yorkshire terriers in an emaciated condition for the purpose of breeding fleas for his circus, was fined £10 and ordered to pay £2 2s. costs at Prestatyn for cruelty to a dog. He was also fined 10s. on each of three charges of keeping dogs without licences and was disqualified for keeping dogs for five years.

* * * * *

We regret that, in effecting proof alterations in the paragraph "Accredited Milk Scheme," in Mr. Blakeway's letter "A Commentary," in our last issue, the printers rendered this unintelligible. The paragraph should read as follows:—

"*Accredited Milk Scheme.*—I know the Ministry of Agriculture allow the veterinary surgeon who tests these cows for the owner, to use the subcutaneous or intradermal tests, and it occurs to me that members who have had little or no experience with the intradermal method are very liable to make mistakes. I always found the subcutaneous method, properly applied, good enough."

N.V.M.A. Divisional Report

LANCASHIRE VETERINARY ASSOCIATION*

Tuberculosis (Attested Herds) and Accredited Milk Schemes Discussed at Liverpool

A general meeting of the Lancashire Division, N.V.M.A., was held at the Department of Veterinary Pathology, University of Liverpool, on Wednesday, March 27th, 1935, at 2.30 p.m.

The Chair was occupied by the President, Mr. R. C. Locke, M.R.C.V.S., D.V.S.M. (VICT.), other members present being Messrs. T. Wilson, C. F. Shawcross, A. J. Wright, F. A. Ball, H. T. Matthews, J. O. Powley, J. Holroyd, W. Woods, G. Mayall, G. C. Webster, P. Lindsay, H. Burrow, T. A. Dobie, P. O'Neill, A. J. Caldwell, H. Holroyd, A. B. Kerr, J. T. Taylor, A. W. Noel Pillers, G. O. Davies, F. W. Priestley, A. H. Leyland, K. D. Downham and A. L. Mullen. Visitors to the meeting were Messrs. J. Bennison, E. Varlay and D. H. Thomas.

The minutes of the previous ordinary general meeting, having been published in *The Veterinary Record*, were taken as read.

CORRESPONDENCE.—(1) From Messrs. J. H. Wright, R. Hughes, E. H. Curbishley, H. G. Hewetson, H. R. Hewetson, G. H. Locke and J. Spruell, apologising for unavoidable absence.

(2) From the Royal College of Veterinary Surgeons, proposing that Divisions might be willing to vote an annual donation to the Library Endowment Fund. After consideration, it was unanimously agreed that a donation be given from time to time in lieu of an annual subscription. It was proposed, seconded and unanimously agreed that the sum of £3 3s. 0d. be donated for the present year.

(3) From the National Veterinary Medical Association asking for consideration of the proposal that a composite subscription be instituted to cover membership of the N.V.M.A. and its divisions. On the recommendation of Council it was formally moved and adopted that this Division did not agree with the proposal in principle.

(4) From the Lancashire, Cheshire and North Staffs. Farriers' and Blacksmiths' Demonstration Committee, referring to a shield presented by the Lancashire Division for competition at the Royal Agricultural Show. On the proposal of Mr. HOLROYD it was unanimously agreed that this matter be referred to Council.

(5) From Messrs. C. Wentworth Elam, R. Isherwood, A. C. Shuttleworth, H. V. Hughes, and Professor J. Share-Jones, resigning membership of the Division. It was unanimously agreed that these resignations be formally accepted.

* Received for publication, April 16th, 1935.

Council Report.

A Council Meeting was held at the Grand Hotel, Aytoun Street, Manchester, on Friday, March 22nd, 1935, at 3.30 p.m. The President, Mr. R. C. Locke, M.R.C.V.S., D.V.S.M. (VICT.) occupied the Chair and members present were Messrs. J. Holroyd, H. T. Matthews, G. C. Webster, H. Sumner, jun., E. H. Curbishley, A. J. Wright, G. H. Locke, W. Woods, H. R. Hewetson, J. H. White, J. Spruell and A. L. Mullen.

Apologies for absence were received from Messrs. A. W. Noel Pillers, G. O. Davies, and A. B. Mattinson.

Minutes of the previous meeting were read and approved.

Correspondence.—(1) From the Farriers' and Blacksmiths' Demonstration Committee in connection with a presentation shield given by this Association for competition at the Royal Lancashire Show.

(2) From the Royal College of Veterinary Surgeons asking for an annual donation to the Library Endowment Fund. On the proposal of Mr. J. Spruell it was unanimously agreed that a donation be given from time to time in lieu of an annual subscription. On the proposal of Mr. G. H. Locke, seconded by Mr. H. R. Hewetson, it was decided to recommend that a sum of £3 3s. be donated for the present year.

(3) From the National Veterinary Medical Association, inviting consideration of the proposal that a composite subscription should be instituted to cover membership of the National and its Divisions. On the proposal of Mr. G. C. Webster, seconded by Mr. H. R. Hewetson, it was unanimously agreed to recommend that we are not in agreement with the proposal in principle.

Consideration was given to further developments regarding the R.S.P.C.A. Hospital and Clinic in Liverpool. The Chairman indicated the nature of these developments. A discussion then followed. On the proposal of Mr. H. T. Matthews, seconded by Mr. J. Holroyd, a subcommittee was appointed to collect relevant facts concerning these developments and to report back to Council at an early date. This was unanimously agreed, Messrs. G. C. Webster, H. R. Hewetson and the President being duly elected.

Programme for the Year.—The March meeting having been arranged, the following recommendations were made for other meetings: (*a*) That Dr. F. Bullock, Secretary of the Royal College of Veterinary Surgeons, be asked to give an address on some aspect of veterinary jurisprudence at a meeting to be held at the end of May; (*b*) After considerable discussion Buxton was chosen as the venue for the summer meeting to be held on June 19th, this meeting to be arranged on the lines of the 1934 meeting—Messrs. G. O. Davies and Watsons, Ltd., to be asked to give a demonstration and the arrangements to be in the hands of Mr. A. J. Wright, the President, and Hon. Secretary; (*c*) November meeting—a clinical meeting on bovine subjects to be arranged.

Mr. J. O. Powley proposed, Mr. C. F. Shawcross seconded and it was unanimously agreed, that this report be approved.

Nomination of New Members.—Major R. F. Bett, M.R.C.V.S., Mottram-in-Longendale, and Mr. G. H. Tullis, M.R.C.V.S., of Wallasey, were proposed by Mr. A. L. Mullen, seconded by Mr. J. Holroyd, while Mr. J. Brennan, M.R.C.V.S., Lancashire County Council, was proposed by Mr. J. Holroyd, seconded by Mr. T. Wilson.

Nomination and Election of Student Members.—The Hon. Secretary stated that he had great pleasure in proposing Mr. D. T. Roberts of Pwllheli as a student member of the Association. Mr. P. J. Mitchell was proposed by Mr. W. Fowle, this proposition being seconded. Election to student membership was duly carried out.

Election of New Members.—On the proposition of Mr. Holroyd, seconded by Mr. Woods, Mr. F. W. Priestley, M.R.C.V.S., Dip. Bact. (Lond.) of Manchester, was unanimously elected a member of the Association.

The Tuberculosis (Attested Herds) Scheme

The President then called upon Mr. J. O. Powley, M.R.C.V.S., Superintending Inspector of the Ministry of Agriculture, to open a discussion on the Tuberculosis (Attested Herds) Scheme. In complying, Mr. Powley referred very briefly to the salient features of the scheme, particulars of which are well known to the profession, and invited the comments of members on the details of the scheme.

Messrs. J. Holroyd, G. C. Webster, A. B. Kerr, R. C. Locke, A. J. Wright, H. T. Matthews, T. Wilson, C. F. Shawcross, A. W. Noel Pillers and H. Burrow contributed to an enthusiastic if somewhat critical discussion. Many points were raised by the members taking part in the discussion. Mr. Powley concluded by dealing with each point and gave a brief résumé of the criticism raised.

The following statements were made in the course of the discussion :—

> That the scheme was too drastic as an initial effort, inducements not being sufficient to attract a large number of stock-owners.
>
> Very few of the Certified or Grade A (T.T.) herds could comply with the scheme. (T. Wilson, Nantwich.)
>
> The obligation imposed upon the Grade A producer that he must remove from the herd cows which are known to have reacted to the tuberculin test would act as a deterrent for an accredited producer to become attested. (A. J. Wright, Macclesfield.)
>
> That the Milk Boards levies more than swallow the bonuses obtained, leaving the attested man several pence per gallon worse off than an accredited producer. (J. Holroyd, Blackburn.)
>
> Any new scheme should have dealt with or revised the regulations covering the production of Certified or Grade A milk. (H. Burrow, Birkenhead.)
>
> The scheme was valueless for flying herds. (W. Woods, Wigan.)

That it was not a commercial proposition and could not therefore become popular.

It was said that a bonus on milk was wrong in principle ; the bonus should be on the animal rather than on the milk. (H. T. Matthews, Liverpool.)

It was also suggested that the scheme added one more title to confuse an agricultural community already overburdened with terms.

That the various schemes for cleansing and freeing dairy stock from disease were antagonistic to each other. (G. C. Webster, Lancaster.)

That the scheme should be treated solely as a diseases of animals problem and not mixed up with concern for human health.

There appeared to be a lack of co-ordination between the Ministry of Agriculture, Milk Recording Societies and the Breed Societies.

The point was made that testing and milk recording were, up to point, incompatible. (H. Burrow, Birkenhead.)

Mr. Burrow further stated that owing to the highly infectious nature of tuberculosis the policy of dealing with isolated farms surrounded by infected places appeared to be an impossible method of tackling the problem. He suggested that more would have been gained by dealing with the disease in certain areas.

Accredited Milk Scheme

Following an interval for tea, the meeting resumed with a discussion on the Accredited Milk Scheme, formally opened by Mr. H. T. Matthews, who gave a keenly appreciated digest in the following terms :—

This scheme is likely to be just as popular as the Attested Herds Scheme proves to be unpopular. The Milk Marketing Board is a body created by the trade and from the trade. It is entirely separate from the Ministry of Agriculture and Fisheries, though it has parliamentary sanction, and its actions are given ministerial approval and have the force of an Act of Parliament. In the Accredited Scheme, the Board has utilised the existing legislation of the Milk (Special Designations) Order of 1923, and the existing machinery of Local Authority administration. Milk producers holding Local Authority licences to produce Grade A milk qualify for a bonus of 1d. for each gallon of milk produced. The 1d. is obtained from a levy on all producers. The scheme, therefore, is a clear attempt to differentiate between producers who are careful in their methods, and those who are selling a solution of manure. I think we should say clearly that the scheme has our support.

We are mainly concerned with the health of the cattle, and we shall be called upon to sign certificates that a herd is free from a given list of diseases, with the exception of cows specified. It may be useful to discuss the standard of action for dealing with abnormalities which we detect during our examinations. Our duty is not by any means complete when we sign the certificate. We should at least take some notice of what happens to the abnormal cows, and we will certainly be called upon to give advice.

The acute mastitis case should be isolated or at least placed at the end of the milking line and left there for ever, or until the quarter has completely atrophied and become non-functional. The case of chronic mastitis that neither gives bad milk nor gets better, the indurated quarter that is clearly not tuberculous, I think should be treated in the same way. This is the cow about which we are told that " she had a cold in the bag a month ago, but she is all right now." She should have been isolated a month ago and she is not all right now. Bacteria, mainly streptococci, are most persistent in this sort of case, and I do not think people should be made to drink pus cells in Grade A milk, whether they are dangerous to health or not. A three-quartered cow, in my view, should never be brought in and it is questionable whether she should remain in. The cow with sore teats, cow pox, skin abscesses, the aborted cow discharging " whites," all these should be separated and milked last. The importance of this action is not so much in relation to the danger to human beings as in creating the impression on the farmer that these things are controllable and should be controlled. A farmer cannot be expected never to have casualties, but he can be expected to find them and deal with them himself as they occur. Of one item on the list of diseases, I confess I take no notice—that is, enlarged supramammary glands. I believe it got into the list under false pretences and should be eliminated.

Are we to take note of general bodily condition apart from disease, of the cleanliness of cows, premises, equipment, and methods generally ? I think that we should most definitely talk to the farmer on these matters, and occasionally a note on the clinical certificate will certainly not be out of place. In view of the unfortunate division of counties into sanitary areas, there is likely to be some lack of uniformity between different districts, and the examining veterinary surgeon can do a little, without exceeding his duty, to equalise standards of hygiene. The bacterial count is at best a rough measure of methods and unfortunately it fails to show the streptococci of mastitis. The bacterial count and inspection of premises must be taken into consideration together. Incidentally, I do not believe it possible to produce Grade A quality milk all the year round, unless there is an efficient steriliser. Authority for many details

that one may ask of the farmer, is found in the second schedule of the Milk (Special Designations) Order of 1923, where it says that arrangements and processes shall be such as to satisfy the licensing authority that the conditions are not only being complied with, but will be complied with. Admitted a good man can produce good quality milk under bad conditions, but he cannot keep it up for 365 days in the year unless he has reasonable facilities.

There is one point upon which I feel very strongly and which I would like to hear discussed. The Milk (Special Designations) Order prevents the retention in a Grade A herd of a reactor to the tuberculin test. I am sure that this is impeding the preliminary stages to building up tubercle-free herds. The Grade A licence holders are just the type to take a step further, and they dare not start because of this provision. Representations on this point have been made before, but I think that now is a suitable time for repetition.

Messrs. J. Holroyd, G. C. Webster, A. B. Kerr, R. C. Locke, and A. J. Wright contributed to a most enthusiastic discussion.

Mr. J. Holroyd congratulated Mr. Matthews on the excellent way in which he had presented his preliminary discussion. He agreed with Mr. Matthews in the points raised and the standard which should be adopted by veterinary inspectors carrying out the duties entailed. It was essential that the clause relating to reactors to the tuberculin test in Grade A herds should be eliminated.

Mr. G. C. Webster concurred with Mr. Holroyd's views.

Mr. A. B. Kerr (Cheshire County Council) spoke of the procedure adopted in Cheshire and stated that inspectors would take into account the hygienic requirements of the farm as well as the health of the herd.

Mr. H. T. Matthews formally proposed that the following resolution be sent to the National Veterinary Medical Association for any action they deemed fit :—

> "That this meeting of the Lancashire Veterinary Association, believing that the condition requiring that known reactors to the tuberculin test must be removed from Grade A herds is obstructing attempts to create tubercle-free herds, urges that the Milk (Special Designations) Order of 1923, Third schedule, part IIIA (1) should be amended by the deletion of the words "form part of or. . . ."

Mr. A. J. Wright seconded this proposal, which was unanimously approved.

Any Other Business.

The following report of the Lancashire Veterinary Officers' meeting at Preston on March 21st, was submitted and adopted :—

A meeting of the Lancashire County Council veterinary inspectors was held at the Bull and Royal Hotel, Preston, on March 21st, 1935.

The following members were present: Messrs. J. Holroyd (Chairman), Ball, Leyland, Barker, Webster, Lindsay, Adamson, Hankin, Hall, Allen, Brear, Hagan, T. Walker, and A. B. Mattinson (Hon. Secretary).

Mr. J. Holroyd and Mr. A. B. Mattinson were re-elected to the offices of Chairman and Honorary Secretary respectively.

The following subjects were discussed at length:—

(*a*) Overlapping of inspections under the Milk and Dairies (Consolidation) Act, 1915, and the Tuberculosis Order, 1925.

(*b*) Suggestions as to uniformity of methods and charges for the examination of dairy herds, under the Milk (Special Designations) Order.

(*c*) Uniformity of procedure as to valuation of various classes of cattle taken under the Tuberculosis Order, 1925.

(*d*) Encouragement to stockowners to increase the number of accredited dairy herds.

The Chairman and Honorary Secretary were appointed as delegates to interview the relevant departments of the County Council, with a view to the better co-ordination of the veterinary services of the County.

Apologies for absence were received from Messrs. G. H. Locke, H. Ferguson and A. Walker.

A resolution was proposed by Mr. J. Holroyd, seconded by Mr. G. C. Webster, "That the charges for routine inspection of herds recommended by the Lancashire Veterinary Officers Sub-committee, namely 6d. per cow, with a minimum charge of 10/6 plus mileage over 5 miles, be circulated to all the Lancashire practitioners."

A vote of thanks was unanimously passed to the President for his conduct of the meeting.

A. L. Mullen, *Hon. Secretary.*

IN PARLIAMENT

The following questions and answers have been recorded in the House of Commons recently:—

Foot-and-Mouth Disease Policy

Sir Percy Hurd (for Mr. Hanbury) asked the Minister of Agriculture whether, in view of the serious recent outbreaks of foot-and-mouth disease in Dorsetshire, he can now make any statement as to the progress of research into the causes of this pest; and whether the Government is using all its powers to further scientific investigation?

Mr. Elliot: The Foot-and-Mouth Disease Research Committee is, I believe, doing all that is possible in the investigation of this very difficult subject. The programme of work contemplated by the Committee was recently considered by the Agricultural Research Council, and approved. The Fifth Progress Report of the Committee is expected to be available in about two months. It will deal *inter alia* with the work of the Committee on possible means of the introduction of infection into this country and of spread within the country, as well as with problems of immunity.

Sir P. Hurd: Has my right hon. Friend considered the suggestion put forward for more intensive research in order to remedy this devastating disease, perhaps on some island or other isolated area?

Mr. Elliot: I have given consideration to the problem whether research on this subject can be intensified, but I have to be guided very largely by scientific experts, and the Agricultural Research Council has approved of the present course of investigation.

Major Colfox: Has my right hon. Friend considered the fact that shepherds and others thrown out of employment through foot-and-mouth disease receive no compensation of any kind, and cannot something be done to help them?

Mr. Elliot: I have considered that point, but I have no statutory powers in the matter.

Major Colfox: Has my right hon. Friend considered taking statutory powers, or asking for them?

Mr. Elliot: I think that special *ad hoc* legislation to deal with this problem itself would be rather a difficult matter, and that it should form part of a more general review.

Sir P. Hurd (for Mr. Hanbury) asked the Minister of Agriculture whether he is satisfied that the policy of slaughter for foot-and-mouth disease has justified itself?

Mr. Elliot: I am circulating a statement in the Official Report. I may, however, say that I am fully satisfied that the relative freedom of this country from disease could not have been maintained in the present state of knowledge other than by the slaughter of affected animals and those in contact with them.

Following is the statement:

From 1932 inclusive to the present date there have been 69 separate centres of foot-and-mouth disease in Great Britain. In 44 of these centres infection was limited to one or two farms, and in 42 centres the period of operation of the infected area restrictions did not exceed one month. In the remaining 27 centres there was some further spread of infection, but in 25 of these centres disease was completely eradicated and restrictions removed in less than two months, and in the other two centres in less than three months. These results could not have been achieved, with the present knowledge of the disease, by the adoption of any other policy than slaughter of affected animals and those in immediate contact. The operation of this policy for a number of years was examined by the Departmental Committees of 1922 and 1925 and received their approval. The only alternative to slaughter under existing conditions is a policy of isolation and treatment. The Departmental Committee which reported in 1925 strongly condemned isolation as being equivalent to the abandonment of any hope of eradicating the disease from this country, as it would necessitate the prolongation of restrictions, increase the difficulty of supervision of outbreaks, involve owners in heavy losses, and lead to the disease becoming permanently established in this country.

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Imported Canadian Cattle (Tests)

Mr. Leonard asked the Minister of Agriculture whether he has been in communication with the Minister of Trade and Commerce for Canada regarding the tests being applied to Canadian cattle on importation into this country; and whether he has any observations to make on the subject.

The Minister of Agriculture (Mr. Elliot): Information is being conveyed to the Canadian Government through the usual channels with regard to the examinations undergone by Canadian breeding cattle imported into this country. The answer to the last part of the question is in the negative.

Notes and News

The Editor will be glad to receive items of professional interest for inclusion in these columns.

Diary of Events

May 27th.—Meeting of the Editorial Committee, N.V.M.A., at 2, Verulam Buildings, Gray's Inn, W.C.1, at 4 p.m.

May 22nd.—Meeting of the Southern Counties Division, N.V.M.A., at Bournemouth, 2.30 p.m.

May 22nd.—Meeting of the Comparative Section, Royal Society of Medicine, 1, Wimpole Street, W., 5 p.m.

May 23rd.—Meeting of the Lancashire Division, N.V.M.A., at Manchester.

May 23rd.—Voting Papers issued R.C.V.S. Council Election.

May 30th.—Last day for return of Voting Papers R.C.V.S. Election.

June 6th.—R.C.V.S. Annual General Meeting, 12 noon; Luncheon, 1.15 p.m.
Annual General Meeting, Victoria Veterinary Benevolent Fund, 12.45 p.m.
Meeting of the Central Division, N.V.M.A., at the Museum, Royal College of Surgeons, 6.30 p.m.

June 13th.—D.V.S.M. Examination begins, Edinburgh.

June 14th.—Fees due for July Examinations, R.C.V.S.

June 14th.—R.A.V.C. Annual Dinner, Hotel Victoria, 8 p.m.

June 26th.—R.C.V.S. Committee Meetings.

June 27th.—R.C.V.S. Committee Meetings.

June 28th.—R.C.V.S. Committee and Council Meetings.

June 30th.—Final date for payment of Annual Fees to R.C.V.S.

July 1st.—R.C.V.S. Diploma Examinations begin.

July 29th—August 2nd: N.V.M.A. Congress at Belfast.

August 24th.—Last date for entries for Jubilee Memorial Prize Examination.

Sept. 24th to 25th.—Jubilee Memorial Prize Examination.

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THE LOYAL ADDRESS:

ACKNOWLEDGMENT

We publish below the letter of acknowledgment, received from the Home Secretary, of the address of the Council of the Royal College of Veterinary Surgeons to His Majesty the King, which was reproduced as the frontispiece of our last issue.

Home Office,
Whitehall.
May 9th, 1935.

Sir,

I am directed by the Secretary of State to say that he has been Commanded by the King to convey to you His Majesty's thanks for the loyal and dutiful Address from the President and Council of the Royal College of Veterinary Surgeons on the completion of the Twenty-fifth Year of His Majesty's Reign, and to assure you that His Majesty deeply appreciates the sentiments of loyalty and affection to which it gives expression.

I am, Sir,
Your obedient Servant,
(Sgd.) H. A. Strutt.

The Secretary and Registrar,
Royal College of Veterinary Surgeons,
10, Red Lion Square,
W.C.1.

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R.C.V.S. LIBRARY ENDOWMENT FUND

In forwarding the list of donations to the above Fund, published elsewhere in this issue, Dr. Fred Bullock, Librarian, R.C.V.S., writes: "The response to the Council's appeal has not been what was hoped, but the list is still open and further contributions will be welcomed. The resources of the Library are becoming more widely known among members of the profession, and as more use is being made of the Library services the expense of maintenance is increasing."

As has been pointed out many times, the Library of the Royal College is now an institution in which the whole profession may justifiably take great pride; its potential value as a means of facilitating the work of those engaged in veterinary and allied sciences is illimitable, and we urge upon those who see in the growth of their Library—as all should do—an index of professional progress, the duty of ensuring that its scope and the exercise of its functions shall no longer be made subject to the deplorable restrictions dictated by lack of funds.

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A NOTABLE MEETING

The meeting of the Central Veterinary Society at the Royal College of Surgeons on June 6th, to which attention is drawn in greater detail elsewhere, affords veterinarians the opportunity of hearing an authority discourse on one aspect of a subject deserving of greater attention from the members of the profession than they have devoted to it hitherto: Sir Frank Colyer will speak on "Caries and Paradontal Diseases in Wild and Captive Animals." With veterinary, medical and dental circles alike interested, a large attendance is anticipated.

PERSONAL

Appointment.—Mr. H. R. Binns, M.A. (Cantab.), M.R.C.V.S., Stamboul, Turkey, has been appointed as Veterinary Officer, Nyasaland.

King's Jubilee Medal.—Certain members of the profession who hold Appointment to the King in the form of the Royal Warrant—Honorary Veterinary Surgeons to His Majesty—are among the recipients of the Silver Jubilee Medal: a limited issue to persons who have rendered special service to the Crown during the past 25 years. It is stated that "the medal is to be regarded as a personal souvenir from the King."

Marriage.—Willett—Payne: On May 8th, at St. John's Church, Tunbridge Wells, Eric, only son of Mr. John Willett, M.R.C.V.S., of Harley Place, Marylebone Road, W., to Margaret Phœbe, daughter of Mr. Ewart Payne, "Abingdon," Tunbridge Wells.

Presentation.—On leaving Glasgow to take up an appointment in the County of Durham, Mr. Thomas Johnson, M.R.C.V.S., was entertained by the staff of the Glasgow Corporation Veterinary Department, and was presented with a gold wristlet watch.

"Three Generations".—Regarding the reference made in a recent issue of this journal to the fact that three generations of the Reeks' family had passed, in succession, through the London College, and the comment that this, it was thought, constituted a record, Mr. James Blakeway, of Stourbridge, writes to say that his father graduated at Camden Town, he himself did so in 1860, to be followed by his son, Major J. Blakeway, who was killed in action in France.

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R.C.V.S. OBITUARY

Turtill, William, Wickham Market, Suffolk. Graduated London, April 12th, 1888; died May 5th, 1935, aged 86 years.

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DEATH OF PROFESSOR KOLLE

We regret to record the death, after a lingering illness, of Professor Dr. Wilhelm Kolle, director of the State Institute for Experimental Therapy and of the Chemo-Therapeutical Institute Georg-Speyer-Haus at Frankfurt, who achieved an international reputation in the field of bacteriology and immunology.

Entering the service of the Robert Koch Institute for infectious diseases in Berlin in 1893, he led a scientific expedition in South Africa from 1897 to 1899 for the purpose of studying and combating leprosy and rinderpest, and was sent on a similar mission by the Egyptian Government to the Sudan in 1900. In 1915 he succeeded Professor Paul Ehrlich as director of the Frankfurt Institute. In co-operation with Richard Pfeiffer he laid the foundation of protective vaccination against cholera and typhoid fever, which eventually proved of great value during the War. Together with Turner he also discovered a successful method of vaccination against rinderpest. During his years at Frankfurt he acquired fame by his extensive studies on syphilis and salvarsan therapy inaugurated by Professor Paul Ehrlich. More recently Professor Kolle had been working on elaborate scientific plans connected with cancer research.

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GIN TRAPS (PROHIBITION) BILL

Sir Frederick Hobday, in a letter published in a recent issue of *The Times*, says: "In con-

nection with the Gin Traps (Prohibition) Bill which will shortly be read for the second time in the House of Lords, it may be useful to summarise what the community will gain and lose by abolishing the gin trap.

"Far from keeping down rabbits, the professional trapper has worked up hordes of these destructive animals, which cost the farmer much more in damage to his crops and pastures than he makes out of the trapping. It will be of immense gain to agriculture if gin-trapping is abolished and if rabbits are kept down by the incomparably more efficient Australian method of cyanide fumigation. For catching rats and mice in bulk the gin trap is useless and other means have to be used. Admittedly the gin will catch isolated rats, but several more humane methods are available for that purpose. So far therefore as keeping down rabbits and rats is concerned, the community will gain much and lose nothing by abolishing the gin.

"On the other hand, it is true that the production of rabbits for food will, after the abolition of the gin trap, have to be restricted to those districts in which rabbits can be profitably caught by humane means such as the long net. It is further true that a slight increase in the employment of gamekeepers may become necessary, since a little more work and skill are required in dealing with cats and other predators in game preserves when the gin is not employed.

"This small sacrifice will be ungrudgingly made, for anybody who condones the use of such a barbarous instrument as the gin for any animal whatever must be destitute of all decent feeling."

The Editor acknowledges, with thanks, the receipt of the following:—

Communications from Mr. H. E. Bywater (London), Professor W. Kearney (Dublin), Mr. A. R. Smythe (Falmouth) and Dr. W. R. Wooldridge (London).

Report of the Annual General Meeting of the Scottish Branch, N.V.M.A., from Professor Geo. F. Boddie, Hon. Secretary.

Reports of proceedings of the North Wales and the West of Scotland Divisions, N.V.M.A., from Messrs. Howel V. Hughes and Alex. Thomson, respective Hon. Secretaries.

Correspondence

Letters to the Editor should reach the Office not later than by the first post on Tuesday morning for insertion in following Saturday's issue.

All correspondence must bear the name and address of the contributor for publication.

The Editor does not hold himself responsible for the opinions of his correspondents.

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GRUNTING AND UNSOUNDNESS

To the Editor of The Veterinary Record

Sir,—Mr. Willett has brought out this old-time subject once again. Mr. Male, in his letter, leaves us very much as we were: he tells us what grunting is—which we know—but says very little of what there is to say, as yet, about its pathology. No-one has been able to enlighten me as to the pathology of grunting.

If there is no pathological lesion there is no unsoundness. Grunting is a defect, but not a progressive one. There is no evidence that it shortens the life of any horse—nor does it interfere with its daily work.

I think I am entitled to express an opinion—based on nearly 40 years' very active experience—that grunting is a defect, not an unsoundness. Naturally its presence should, always, be mentioned to the intending purchaser.

I wonder how many of my fellow practitioners have noticed that grunting is peculiar to the male sex! I should be much interested to see a mare which grunted.

Yours faithfully,

J. P. Railton.

The White House,
Kington,
Herefordshire.
May 8th, 1935.

Diseases of Animals Acts

SUMMARY OF RETURNS

Period.	Anthrax.		Foot-and-Mouth Disease.		Parasitic§ Mange.		Sheep Scab.	Swine Fever.	
	Outbreaks confirmed.	Animals attacked.	Outbreaks confirmed.	Animals slaughtered as diseased or exposed to infection.	Outbreaks reported by the Local Authorities.	Animals attacked.	Outbreaks confirmed.	Outbreaks confirmed.	Swine slaughtered.
	No.	No.	No.	No.	No.	No.	No.	No.	No.
Period 16th to 30th April, 1935	23	25	6	2,014	2	5	8	84	49
Corresponding period in									
1934	19	23	—	—	8	8	12	44	26
1933	13	13	—	—	7	11	—	116	71
1932	21	25	2	160	2	6	8	100	59
Total 1st January to 30th April, 1935	153	168	30	8,962	59	88	171	578	259
Corresponding period in									
1934	169	176	1	31	75	122	311	518	286
1933	130	150	54	5,161	85	158	179	430	196
1932	163	210	3	227	65	115	117	722	331

Note.—The figures for the current year are approximate only. § Excluding outbreaks in Army Horses.